



AMENDMENTS TO THE CLAIMS

Claim 1 (Cancelled)

2. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1, 48 wherein the activated particulate silica used in step (a) is a microspheroidal, porous silica.

3. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1 ~~or 2~~, 48, wherein the activated particulate silica used in step (a) has an average particle size ranging from 10 to 120 nm.

4. (Currently Amended) A The process for obtaining producing a solid catalyst component according to ~~any one of claims 1 to 3~~, claim 48, wherein the activated particulate silica used in step (a) has a surface area ranging from 250 to 500 m²/g.

5. (Currently Amended) A The process for obtaining producing a solid catalyst component according to ~~claims 1 to 3~~, claim 48, wherein the activated particulate silica used in step (a) has a pore volume ranging from 1.0 to 2.0 ml/g.

6. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1, 48, wherein the organometallic

compounds of groups 1, 2, 12 or 13 of the periodic table used in step (a) ~~is~~ are selected from the group consisting of trimethylaluminum, triethylaluminum (TEAL), methylaluminum dichloride, methylaluminum sesquichloride, isobutylaluminum dichloride, isobutylaluminum sesquichloride, ethylaluminum dichloride (EADC), diethylaluminum chloride (DEAC), ethylaluminum sesquichloride (EASC), tri-n-hexylaluminum (Tn-HAL), tri-n-octylaluminum (TnOAL), butyl ethylmagnesium (BEM), butyl octylmagnesium (BOMAG), methylmagnesium chloride ~~or~~ and ethylmagnesium chloride.

7. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1, 48, wherein the magnesium compound used to prepare the solution ~~of the~~ in step (c) is selected from the group consisting of magnesium dichloride, magnesium diethylate, magnesium di-n-butylate, magnesium diisopropylate ~~or~~ and magnesium diisobutylate.

Claim 8 (Cancelled)

9. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1, 48, wherein the titanium compound used to prepare the solution of the step (c) is selected from the group consisting of titanium tetra-n-propylate, titanium tetra-n-butylate, titanium tetra-i-propylate, titanium tetra-i-butylate or the corresponding titanium mono- or di-chloroalkoxides.

Claim 10 (Cancelled)

11. (Currently Amended) A The process for obtaining producing a solid catalyst component according to ~~any one of claims 1, 7, 8, 9 or 10,~~ claim 48, wherein the molar ratio Ti/Mg used to prepare the solution of the step (c) is ~~comprised~~ between 0.3 and 4.

12. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1, 48, wherein the reducing agent used in the step (e) is ~~Na-alkyl, Li-alkyl, Zn-alkyl, Mg-alkyl~~ a Na-alkyl, a Li-alkyl, a Zn-alkyl, a Mg-alkyl and corresponding aryl-derivatives, ~~Grignard~~ and compounds of the type RMgX or polyhydrosiloxanes- wherein R represents linear or branched alkyl groups containing 1 to 10 carbons or alkyl-derivatives and X is a halogen atom.

13. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1 ~~or 12,~~ 48, wherein the reducing agent used in the step (e) is $(\text{CH}_3)_3\text{SiO}[(\text{CH}_3)\text{HSiO}]_n\text{Si}(\text{CH}_3)_3$, $(\text{CH}_3\text{HSiO})_4$, $(\text{CH}_3\text{HSiO})_3$, $\text{H}_3\text{Si-O-SiH}_2\text{-OSiH}_3$ or phenylhydropolysiloxanes in which the hydrogen atoms can be partially replaced by methyl ~~groups.~~ Groups and n is the degree of polymerization that ranges from 5 to 100.

Claim 14 (Cancelled)

15. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1, 48, wherein the halogenating agent used in the step (f) is selected from the group consisting of methylaluminum dichloride, methylaluminum sesquichloride, isobutylaluminum dichloride,

isobutylaluminum sesquichloride, ethylaluminum dichloride (EADC), diethylaluminum chloride (DEAC), ethylaluminum sesquichloride (EASC), SiCl_4 , SnCl_4 , HCl , Cl_2 , HSiCl_3 , aluminum chloride, ethylboron dichloride, boron chloride, diethylboron chloride, HCCl_3 , PCl_3 , POCl_3 , acetyl chlorides, chloride, thionyl chloride, ~~sulfur chloride~~, methyl trichlorosilane, dimethyl dichlorosilane, TiCl_4 , VCl_4 , CCl_4 , t-butyl chloride, n-butyl chloride, ~~chloroform~~, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,2-dichloroethane ~~or~~ and dichloromethane.

Claim 16 (Cancelled)

17. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1, 48, wherein the thermal treatment of the step (g) is conducted from 0.5 hour to 5 hours and at a temperature from 60°C to 120°C.

18. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1, 48, wherein two different organometallic compounds are used in the step (i) to wash the solid obtained in step (h).

19. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim 1 ~~or 18~~, 48, wherein the two different more than one of the organometallic compounds in the step (i) are fed together, mixed in the same solution.

20. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim ~~1 or 18~~, 48, wherein ~~the two different more than one of the~~ organometallic compounds in the step (i) are fed together, in individual solutions.

21. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim ~~1 or 18~~, 48, wherein ~~the two different more than one of the~~ organometallic compounds in the step (i) are fed one after the other, in individual solutions.

22. (Currently Amended) A The process for obtaining producing a solid catalyst component according to ~~claims 1, 18, 19, 20 or 21~~ claim 48, wherein the organometallic compound used in the step (i) is selected from the group consisting of methylaluminum dichloride, methylaluminum sesquichloride, isobutylaluminum dichloride, isobutylaluminum sesquichloride, ethylaluminum dichloride (EADC), diethylaluminum chloride (DEAC), ethylaluminum sesquichloride (EASC), tri-n-hexylaluminum (Tn-HAL) ~~or~~ and tri-n-octylaluminum (TnOAL).

23. (Currently Amended) A The process for obtaining producing a solid catalyst component according to claim ~~1~~, 48, wherein the inert organic solvent ~~used~~ of step (a) is selected from the group consisting of hexane, heptane, octane or isoparaffin.

Claim 24 (Cancelled)

25. (Currently Amended) A The solid catalyst component according to claim ~~24~~, 50, wherein the solid catalyst component morphology is spheroidal.

26. (Currently Amended) A The solid catalyst component according to claim ~~24~~, 50, wherein the solid catalyst component has an average particle size ranging from 10 to 120 nm.

27. (Currently Amended) A The solid catalyst component according to claim ~~24~~, 50, wherein the solid catalyst component has a surface area ranging from 80 to 300 m²/g.

28. (Currently Amended) A The solid catalyst component according to claim ~~24~~, 50, wherein the solid catalyst component has a pore volume ranging from 0.1 to 1.0 ml/g.

29. (Currently Amended) A The solid catalyst component according to claim ~~24~~, 50, wherein the magnesium is present in an amount ranging from 0.003 to 0.03 g of magnesium per g of solid catalyst component.

30. (Currently Amended) A The solid catalyst component according to claim ~~24~~, 50, wherein the titanium is present in an amount ranging from 0.005 to 0.02 g of titanium per g of solid catalyst component.

31. (Currently Amended) A The solid catalyst component according to claim 24, 50, wherein the organometallic compound of the groups 1, 2, 12 or 13 of the periodic table is present in an amount ranging from 0.003 to 0.03 g of metal per g of solid catalyst component.

32. (Currently Amended) A The solid catalyst component according to claim 24 ~~or 31~~, 50, wherein the organometallic compound of the groups 1, 2, 12 or 13 of the periodic table is selected from a group consisting of an organo-aluminum, an organo-magnesium, an organo-lithium ~~or~~ and an organo-zinc compound.

33. (Currently Amended) A The solid catalyst component according to claim 24, 50, wherein the alkoxy groups ~~is~~ are present in an amount ranging from 0.03 to 0.08 g of alkoxy groups per g of solid catalyst component.

34. (Currently Amended) A The solid catalyst component according to claim 24 ~~or 33~~, 50, wherein the alkoxy groups ~~is~~ are selected from the group consisting of n-propoxy, i-propoxy, n-butoxy or i-butoxy.

35. (Currently Amended) A The solid catalyst component according to claim 24, 50, wherein the chlorine is present in an amount ranging from 0.05 to 0.12 g of chlorine atoms per g of solid catalyst component.

Claim 36 (Cancelled)

37. (Currently Amended) ~~A~~ The process for ethylene the
polymerization and copolymerization of ethylene according to claim ~~36~~, 51,
wherein ~~it~~ said process is carried out in a gas phase.

38. (Currently Amended) ~~Process for ethylene~~ The process for the
polymerization and copolymerization of ethylene according to claim ~~36~~ 51,
wherein the ~~co-catalyst~~ catalyst used in the polymerization process is an alkyl
aluminum.

39. (Currently Amended) ~~Process for ethylene~~ The process for the
polymerization and copolymerization of ethylene according to ~~claims 36 or 38~~
claim 51, wherein the ~~co-catalyst~~ catalyst used in the polymerization process is
trimethyl aluminum or triethyl aluminum.

40. (Currently Amended) ~~Process for ethylene~~ The process for
polymerization and copolymerization of ethylene according to ~~claims 36, 38 or 39~~
claim 51, wherein the mass ratio co-catalyst:catalyst in the polymerization process
is between 0.5:1 and 6:1.

41. (Currently Amended) ~~A process for ethylene~~ The process for the
polymerization and copolymerization of ethylene according to ~~claims 36, 37 or~~

~~38, claim 51,~~ wherein the catalyst is fed into a polymerization reactor as a ~~in~~ dry bulk powder, ~~in~~ as a paste, ~~in~~ as an oil suspension or ~~in~~ as a solvent suspension.

42. (Currently Amended) ~~A process for ethylene~~ The process for the polymerization and copolymerization of ethylene according to ~~claims 36 or claim~~ 41, wherein the catalyst is fed directly into ~~the~~ a polymerization reactor.

43. (Currently Amended) ~~A process for ethylene~~ The process for the polymerization and copolymerization of ethylene according to ~~claims 36 or claim~~ 41, wherein the catalyst is prepolymerized before ~~to be~~ being fed into ~~the~~ a polymerization reactor.

44. (Currently Amended) ~~A process for ethylene~~ The process for the polymerization and copolymerization of ethylene according to ~~claims 36, 41 or 43,~~ claim 41, wherein the catalyst is prepolymerized with ethylene or propylene before ~~to be~~ being fed into ~~the~~ a polymerization reactor.

45. (Currently Amended) A linear low density polyethylene produced according to ~~the process of the claims 36 to 44.~~ claim 51.

46. (Currently Amended) A linear medium density polyethylene produced according to the process of ~~the claims 36 to 44.~~ claim 51.

47. (Currently Amended) A high density polyethylene produced according to the process of ~~the claims 36 to 44~~, claim 51.

48. (New) A process for producing a solid catalyst component used in the polymerization or copolymerization of ethylene which comprises:

(a) impregnating an activated particulate silica with a solution of an organometallic compound of the group 1, 2, 12 or 13 of the Periodic Table in an inert organic solvent;

(b) removing an impregnated liquid from step (a);

(c) preparing a solution by reacting at least one magnesium compound selected from the group consisting of magnesium chloride and magnesium alkoxides with at least one titanium compound selected from the group consisting of titanium alkoxides and titanium chlorine alkoxides;

(d) impregnating the silica obtained in (b) using the solution prepared in (c), said solutions containing the magnesium compound in an amount of from 0.0024 to 0.24 g of magnesium per g of silica and the titanium compound in an amount of from 0.01 to 1 g of titanium per g of silica;

(e) optionally reacting the impregnated solid obtained in (d) with a reducing agent in an amount of from 0 to 2 moles per mole of titanium;

(f) reacting the impregnated solid produced in (d) or (e) with a chlorine containing agent in an amount of from 0.5 to 3 moles of chlorine-containing agent per mole of titanium;

(g) thermally treating the impregnated solid produced in (f);

(h) washing the thermally treated solid produced in (g) with an inert organic solid; and

(i) optionally washing the solid produced in (h) with a solution of one or more organometallic compounds of groups 1, 2, 12 or 13 of the Periodic Table.

49. (New) The process of claim 48 wherein the activated particulate silica is produced by heating silica in an inert atmosphere at a temperature of 100 to 750°C and for a period such that the amount of OH remaining on the silica surface after this treatment ranges from 0.1 to 2 mmoles OH per g of silica.

50. (New) A solid catalyst component used in the polymerization or copolymerization of ethylene produced by the process of claim 48.

51. (New) A process for the polymerization or copolymerization of ethylene which comprises conducting the polymerization or copolymerization in the presence of an activated particulate silica catalyst produced by the process of claim 48.